



PROTEIN CONTENT IN RATS' BLOOD UNDER THE INFLUENCE OF ENROFLOXACIN IN VARIOUS FORMS

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Introduction

Administration of antibacterial drugs to animals for therapeutic purposes affects not only microorganisms, but also certain parts of the metabolism. Changes in albumin and globulin protein levels can provide early diagnostic and prognostic information. The aim of this study was to investigate the effects of the traditional form of enrofloxacin, and PEGylated enrofloxacin (the compound of PEG-400 with enrofloxacin) on the content of total protein (TP) and its fractions in the blood of rats.

Material & Methods

Four groups of rats (control and three experimental) were formed to study protein content in the blood. The animals of control group were injected intramuscularly with saline in a volume of 0.03 ml. Rats of the 1st experimental group were injected with enrofloxacin, 2nd – PEG 400, 3rd – PEGylated enrofloxacin. Animals were removed from the experiment on 7, 14 and 21 days after drug administration. The content of TP in blood plasma was investigated (Lowry, 1951) and fractions of soluble proteins were analyzed by the gel electrophoresis.

Results

7 days after drugs administration the content of TP in blood plasma was 67.0 ± 0.92 g/L in the control, by 5.4% lower in 2nd, and by 6.5 (g <0.05) and 3.4% higher in 1st and 3rd experimental groups, respectively. On 21th day of the experiment the TP content was 67.8 ± 0.69 g/L and was higher by 8.3% (p <0.01 - 0.001) in 1st and 2nd groups and by 14.8% (p <0.001) in 3rd group.

During the experiment, the plasma content of γ -globulins of rats after the administration of the drugs did not change much and did not differ between the control and experimental groups.

On 7th day β -globulin level was 14.7 - 15.0% in the control and 1st experimental groups, and by 3.1 - 5.1% (p <0.001) higher in 2nd and 3rd groups. There was no change in β -globulin levels in any of the groups on the 21st day.

The level of α -globulins decreased in the control group and increased in the experimental groups by 1.4% (p <0.01) with the administration of the traditional form of enrofloxacin, by 2.3% (p < 0.001) with PEG400 and by 1.9% with PEGylated enrofloxacin.

Albumin content was 65.4 - 68.3% in the control and experimental groups on the 7th day. On the 21st day the levels of albumin decreased in the experimental groups by 3.0% (1st), by 2.1% (2nd) and by 2.6% (3rd).

Conclusions

TP content slightly increased after the administration of both the traditional form of enrofloxacin and PEGylated enrofloxacin (p<0.05 - 0.001). However, these changes can be regarded as a slight effect (or no effect) of the investigated drugs on the protein level in animals.